

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor Application of: Rolls et al.

Parent Application No.: 09/415,426

Filed: October 8, 1999

For: FAN CONTROL MODULE  
FOR A SYSTEM UNIT

Group Art Unit: 2836

Examiner: Unknown

Attorney Docket.: 5181-41201

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 Derrick Brown	

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir/Madam:

Please amend the case as follows:

**IN THE SPECIFICATION**

The specification has been amended. A clean copy of the amendment is presented herein.  
Attached herewith is a separate sheet highlighting the changes to the specification.

On page 22, lines 29-30, and page 23, lines 1-10, please change the paragraph to the following:

B1

For convenience, tacho (speed) signals 322A1, 322A2, 322B1, and 322B2 from the fans pass via the fan control module 66. The speed signals are not processed by the fan control

B1  
conc.

module, but are instead forwarded via tacho sense 326 to the power distribution board 190. The power distribution board then routes the tacho sense signals to the alarms module 78 to form the signals 286 shown in Figure 13. This routing is convenient as it enables simpler wiring looms to be used. Also, when replacing a fan unit, the maintenance engineer only needs to remove a single bundle of wires from the fan to the fan control module 66, rather than having to locate a number of different connectors connected to the fan. The fan control module thus has four fan connectors, each for receiving a connector connected to a bundle of wiring from a respective fan, plus a further connector for receiving a connector with a bundle of wires from the power distribution board.

### IN THE CLAIMS:

✓  
Please cancel claims 9 and 18 without prejudice or disclaimer as to the subject matter therein.

Claims 1, 10, 14, 16, 21, and 23 have been amended. Clean copies of the amended claims are presented herein. Attached herewith is a separate sheet highlighting the changes to the claims.

B2

1. (Amended) A fan control module for a system unit, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal, and wherein speed signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

B3

10. (Amended) A system unit including a fan control module, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the

B3  
conc.

fans for controlling the speed thereof dependent upon the temperature signal; and wherein speed signals from each of the fans are driven via the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

B4

14. (Amended) The system unit of claim 11, wherein the fan control module comprises one power input for receiving power from a power supply for the first part, the first part including first electrical noise isolation circuitry to isolate system components from electrical noise generated by a first pair of fans, and a second power input for receiving power from a power supply for the second part, the second part including second electrical noise isolation circuitry to isolate system components from electrical noise generated by a second pair of fans.

B5

16. (Amended) The system unit of claim 10, wherein a first fan of a pair of fans is a system fan for drawing air into the system unit and a second fan of a pair of fans is a processor fan for driving air over a processor module in the system unit.

B6

21. (Amended) The system unit of claim 19, wherein the signals output by the control unit are dependent upon the number of processor modules present.

B7

23. (Amended) A method of controlling cooling of a system unit, the method comprising:  
a fan control module receiving a temperature signal from a temperature sensor;  
the fan control module determining power outputs to the fans for controlling the speed thereof dependent upon the temperature signal from the temperature sensor in accordance with preprogrammed control information; and wherein speed signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

$\frac{1}{\sqrt{\pi}} \int_{-\infty}^{\infty} f(x) \delta(x-a) dx = f(a)$

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Respectfully submitted,



Date: 10-19-01

## Specification Amendments – Changes Highlighted

For convenience, tacho (speed) signals 322A1, 322A2, 322B1, and 322B2 from the fans pass via the [alarms] fan control module 66. The speed signals are not processed by the fan control module, but are instead forwarded via tacho sense 326 to the power distribution board 190. The power distribution board then routes the tacho sense signals to the alarms module 78 to form the signals 286 shown in Figure 13. This routing is convenient as it enables simpler wiring looms to be used. Also, when replacing a fan unit, the maintenance engineer only needs to remove a single bundle of wires from the fan to the fan control module 66, rather than having to locate a number of different connectors connected to the fan. The fan control module thus has four fan connectors, each for receiving a connector connected to a bundle of wiring from a respective fan, plus a further connector for receiving a connector with a bundle of wires from the power distribution board.

10. (Amended) A system unit including a fan control module, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal[.]; and wherein speed signals from each of the fans are driven via the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

14. (Amended) The system unit of claim 11, wherein the fan control module comprises one power input for receiving power from a power supply for the first part, the first part including first electrical noise isolation circuitry to isolate system components from electrical noise generated by [the] a first pair of fans, and a second power input for receiving power from a power supply for the second part, the second part including second electrical noise isolation circuitry to isolate system components from electrical noise generated by [the] a second pair of fans.

16. (Amended) The system unit of claim 10, wherein a first fan of [each] a pair of fans is a system fan for drawing air into the system unit and a second fan of [each] a pair of fans is a processor fan for driving air over a processor module in the system unit.

21. (Amended) The system unit of claim 19, wherein the signals output [b] by the control unit [is] are dependent upon the number of processor modules present.

23. (Amended) A method of controlling cooling of a system unit, the method comprising:

a fan control module receiving a temperature signal from a temperature sensor;  
the fan control module determining power outputs to the fans for controlling the speed thereof dependent upon the temperature signal from the temperature sensor in accordance with preprogrammed control information[.]; and wherein speed signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.




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\_\_\_\_\_  
Paul Kennedy

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For convenience, tachometer (speed) signals 322A1, 322A2, 322B1, and 322B2 from the fans pass via the fan control module 66. The speed signals are not processed by the fan control module, but



are instead forwarded via tacho sense 326 to the power distribution board 190. The power distribution board then routes the tacho sense signals to the alarms module 78 to form the signals 286 shown in Figure 13. This routing is convenient as it enables simpler wiring looms to be used. Also, when replacing a fan unit, the maintenance engineer only needs to remove a single bundle of wires from the fan to the fan control module 66, rather than having to locate a number of different connectors connected to the fan. The fan control module thus has four fan connectors, each for receiving a connector connected to a bundle of wiring from a respective fan, plus a further connector for receiving a connector with a bundle of wires from the power distribution board.

#### **IN THE CLAIMS:**

Claims 1, 10, 21, and 23 have been amended. Clean copies of the claims are presented herein. Attached herewith is a separate sheet highlighting the changes to the claims.

1. (Amended) A fan control module for a system unit, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal; and wherein speed signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

10. (Amended) A system unit including a fan control module, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal; and wherein speed

signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

21. (Amended) The system unit of claim 19, wherein the signals output by the control unit are dependent upon the number of processor modules present.

23. (Amended) A method of controlling cooling of a system unit, the method comprising:

a fan control module receiving a temperature signal from a temperature sensor;

the fan control module determining power outputs to the fans for controlling the speed thereof dependent upon the temperature signal from the temperature sensor in accordance with preprogrammed control information; and wherein speed signals from each of the fans are supplied to the fan control module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

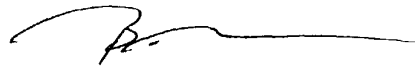
REMARKS

Claims 1-8, 9-17, and 19-27 are pending in the application. Claims 1, 10, 21, and 23 have been amended for clarification. The specification has also been amended.

Applicant submits that all pending claims are in condition for allowance, and an early notice to that effect is earnestly solicited. If a phone interview would speed allowance of any pending claims, such is requested at the Examiner's convenience.

The Commissioner is authorized to charge any fees which may be required, or credit any overpayment, to Conley, Rose & Tayon, P.C. Deposit Account No. 501505\5181-41201\BNK.

Respectfully submitted,



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Phone: (512) 476-1400  
Date: July 12, 2001

Claim Amendments (Changes Highlighted)

1. (Amended) A fan control module for a system unit, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal; and wherein speed signals from each of the fans are [driven via] supplied to the fan control [unit] module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

10. (Amended) A system unit including a fan control module, the fan control module comprising power outputs for supplying power to a plurality of fans, a temperature sensor for giving a temperature signal, and a control unit connected to receive the temperature signal and including preprogrammed control information for determining power signals to be supplied to each of the fans for controlling the speed thereof dependent upon the temperature signal; and wherein speed signals from each of the fans are [driven via] supplied to the fan control [unit] module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

21. (Amended) The system unit of claim 19, wherein the signals output by [of] the control unit [is] are dependent upon the number of processor modules present.

23. (Amended) A method of controlling cooling of a system unit, the method comprising:  
a fan control module receiving a temperature signal from a temperature sensor;  
the fan control module determining power outputs to the fans for controlling the speed thereof dependent upon the temperature signal from the temperature sensor in accordance with preprogrammed control information; and wherein speed signals from each of the fans are [driven via] supplied to the fan control [unit] module, speed dependent signals being supplied from the fan control module to a power distribution board and an alarms card.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

For convenience, tacho (speed) signals 322A1, 322A2, 322B1, and 322B2 from the fans pass via the [alarms] fan control module 66. The speed signals are not processed by the fan control module, but are instead forwarded via tacho sense 326 to the power distribution board 190. The power distribution board then routes the tacho sense signals to the alarms module 78 to form the signals 286 shown in Figure 13. This routing is convenient as it enables simpler wiring looms to be used. Also, when replacing a fan unit, the maintenance engineer only needs to remove a single bundle of wires from the fan to the fan control module 66, rather than having to locate a number of different connectors connected to the fan. The fan control module thus has four fan connectors, each for receiving a connector connected to a bundle of wiring from a respective fan, plus a further connector for receiving a connector with a bundle of wires from the power distribution board.

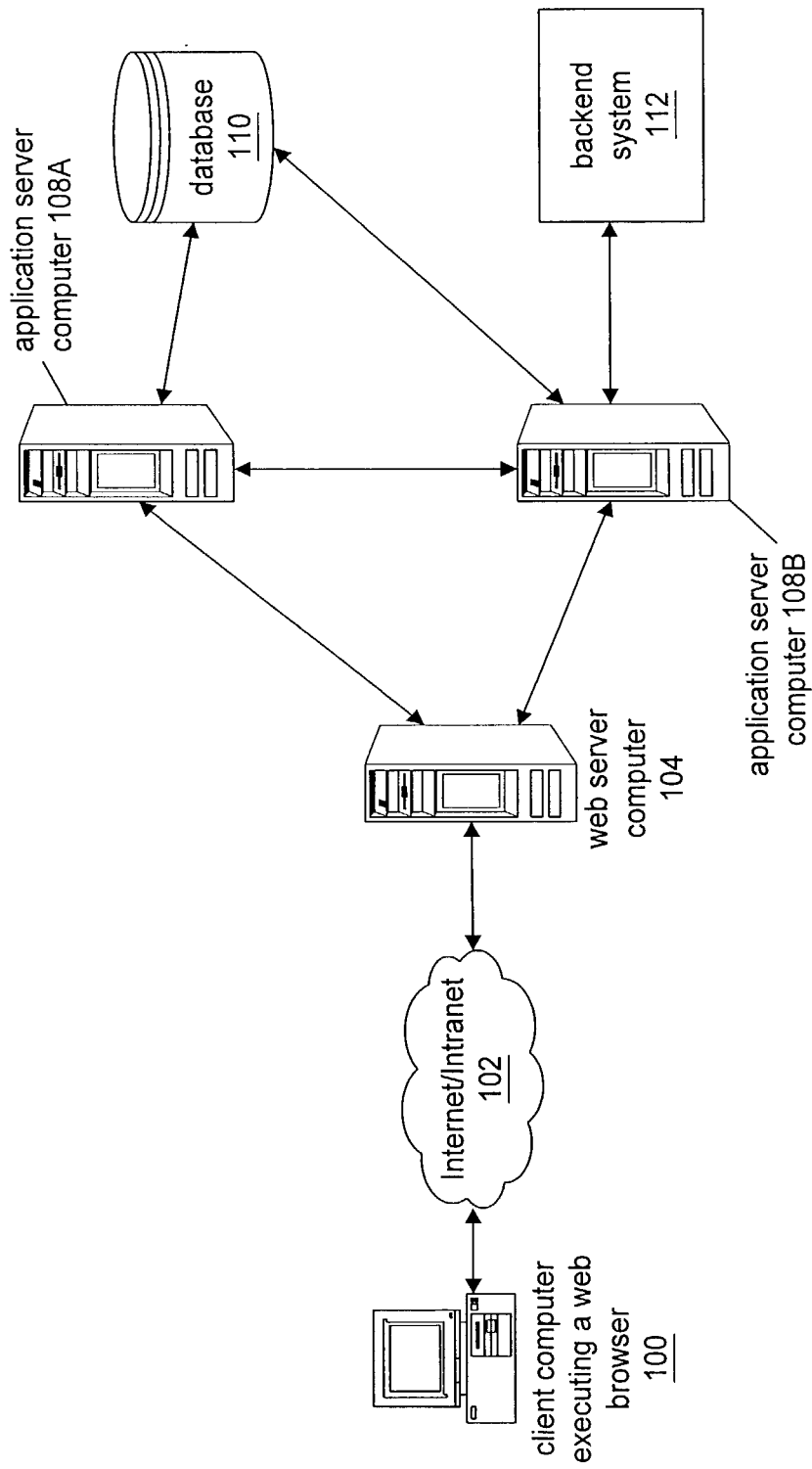


FIG. 1